

dynamic hybrid

driving dynamics and energy management

Already the only luxury maker with five hybrids, Lexus launches the all-new 2011 CT 200h—the first and only full hybrid in the premium compact segment. We headed to New Orleans and Louisiana Bayou Country to drive near-production models.

Brian Bolain, Lexus National Marketing and Lifecycle Strategy Manager, reminds us that since their first—the RX 400h in 2005, Lexus has introduced a new hybrid each year. Most recent was the HS 250h (see our Jul/Aug'09 and Jan/Feb'10 issues). It would seem they have a pace to maintain, but Bolain says the real goal is to have something for everyone in hybrid form. With the CT 200h, they aim to show a hybrid with “no sacrifice.” Affordable to purchase and own, and fun on the road.

There are 530 million hybrids on the road worldwide, with three out of four of those on US roads, most from Toyota/Lexus. The company recognizes there are a variety of powertrain solutions in development, but this is a technology that is ready to go. The HS 250h, a four-door hybrid sedan closely related to the Toyota Prius, has had lower sales than expected, and to fewer younger buyers. The CT 200h, called a 5-door (not a hatchback), aims to

cure that. “C” stands for compact, “T” for touring, “200” rounds off 1.8-liters, and “h” is for hybrid. Stated competitors are the Audi A3, BMW 1 Series and Volvo C30. Hybrid-apples-to-gasoline-oranges, the CT 200h boasts the best fuel economy in the luxury market: 42 mpg combined (on regular gas), against 34 mpg for its nearest competitor. Higher than the HS 250h, this approaches the Toyota Prius, and with higher style and handling.

Bolain sees the CT 200h as a breakthrough in one simple sense: “Who would ever have said ‘fun to drive’ and ‘luxury hybrid’ in one sentence?” he asks. Bolain points out that while it may not offer “blistering acceleration,” it promises a “dynamic and engaging drive.”

DYNAMICS, MOODS AND MODES

Key to the CT 200h's sporting driving experience is its highly focused driver's cockpit, with a low driver's seat featuring enhanced lateral and lumbar support, a wide-grip steering wheel and high-visibility triple gauges. The driver's hip point is as close as possible to the vehicle's center of gravity, delivering a very balanced feel.

The CT 200h's highly modified platform incorporates

a number of exclusively developed body, chassis and full hybrid series/parallel powertrain control systems designed to provide two distinct driving moods—Dynamic or Relaxing—in conjunction with hybrid EV, ECO, Normal and Sport on-demand drive modes. The platform is Prius-based but is 4 inches shorter, closer to some European models, especially with its advanced suspension.

The Lexus CT 200h suspension design combines a proven MacPherson strut front system with a new fully-independent double wishbone architecture at the rear, for comfort, handling and package efficiency.

Handling stability is enhanced by the high structural rigidity of the bodyshell, a low center of gravity, and the minimizing of yaw through use of aluminum for hood, tailgate and bumper reinforcements. New to any compact Lexus, a lateral performance damper system absorbs and minimizes body vibrations, for a linear steering feel and enhanced ride comfort. Charles Hubbard, Lexus Product Education Administrator Senior for the University of Toyota, tells us only the high-performance IS-F and super-high-po LFA have as much steering control. We'll be putting the dampers to the test on the cobblestone streets of New Orleans. The body's high rigidity was achieved detail by detail, with specific reengineering of weld points and more rigid cross-members.

EFFICIENCIES AND PERFORMANCE

Bolain lists the CT 200h's unique combination of attributes as (a) being a hybrid, (b) having four modes for varying economy and sportiness, (c) delivering great handling and (d) having a comfortable interior.

Hubbard explains how this is achieved. The CT 200h is lightweight and efficient. A compact NiMh battery adds to luggage space. Lexus says this battery should last the life of the car (15 years). If not, or if someone



The CT 200h's size and weight are helped by an optimized hybrid powerplant and a compact NiMh battery pack. Contextual gauges show charging info with a blue glow in ECO mode, a tachometer and red glow in Sport.

keeps it longer, the battery or even a single cell could be replaced. In years of testing, they've experienced just one problem, with just one cell, several years ago.

And then there is the powertrain. With a total system output of 134 hp (100 kW), the CT 200h accelerates seamlessly from 0-60 mph in 9.8 seconds. At the same time, the CT 200h boasts remarkably low emissions, significantly less NOx and zero particulate emissions, compared to an equivalent diesel-engined vehicle. When operating in EV mode (for up to a mile at up to 28 mph), it generates zero NOx and zero particulates. Body and undercarriage aerodynamics deliver a Cd of 0.29.

Other green and energy-saving measures include low-powered LED lighting (up to 89 LED lamps, the most in any Lexus), lightweight air conditioning, audio with an energy-efficient amplifier and bamboo charcoal speakers, and other bio-sourced materials. The CT 200h interior is available in leather or standard NuLux—an alternative to leather that emits no volatile organic compounds, is lighter, emits no CO2 and has no dyes—and creates an interior that is 80 percent recyclable.

There are two audio systems, standard and premium, both claimed to be 50 percent better while 20 percent lighter. A universal holder (not built into our test prototypes) will accommodate everything from an iPod nano to freestanding navigation units.

SAFETY TECHNOLOGIES

The CT 200h is equipped with a comprehensive range of active, passive and pedestrian impact safety features, with an optional pre-emptive, Pre-Collision Safety system incorporating Adaptive Cruise Control, eight airbags

including driver and front passenger knee airbags, Whiplash Injury Lessening (WIL) front seats fitted as standard, an upgraded Electronically Controlled Braking-Regeneration system (ECB-R) incorporating Anti-Lock brakes (ABS), Brake Assist (BA), Traction Control (TRAC) and Vehicle Stability Control (VSC) and a hybrid version of the brake override system, Smart Stop Technology.

OUR CT 200H DRIVE

Lexus had four routes laid out for the press corps. Three were in New Orleans: one in the French Quarter, considered especially good for testing the EVO mode, one in the Garden District and one in the Esplanade. The fourth was much longer, across the river, through the bayou, marshes, oil and gas fields and 'gator-wrasslin' backwoods, and featuring “the one curvy road in all of Louisiana,” per our hosts. We opted for the open road first.

Traffic exiting the city and crossing the bridge over the Mighty Mississippi was thick enough that we drove the car absolutely normally (for us) for awhile, and we're happy to report that you can do this—you don't even need to know it has a very special drivetrain—just drive. As traffic opened up and the roads narrowed down to two lanes, we tried the various modes, with their compound adjustments to power, shift points, steering and suspension. On a straightaway, clicking back and forth between ECO and Sport, we found the steering noticeably different. If you're in Sport and wiggle the wheel a little bit, it's very stiff and solid and tracks straight ahead; if you're in ECO and wiggle the wheel, it rocks and rolls—verifying

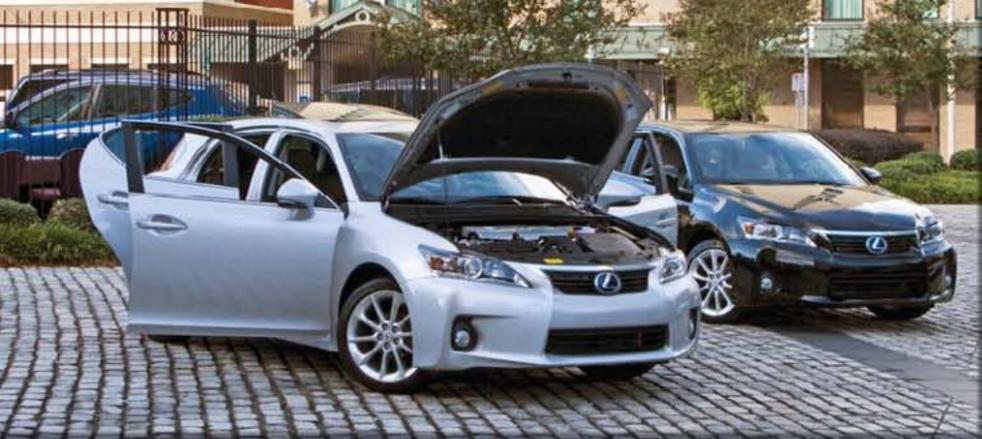
KEEP RIGHT >>



BY JOE SAGE

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that the settings are functionally different, moreso than some multi-mode vehicles. We reached the tiny US Post Office at Kraemer LA, compared notes with colleagues traveling the same course, and turned around.

Next was that curvy stretch, delivered as billed. We thought we took a pretty hard run in one direction. A Ferrari it's not, but it performed pretty admirably here. We then swapped with our codriver, racing champ Denise McCluggage, who as always found some additional range, but not much by her standards.

As it turns out, construction and a very backed-up bridge made that route a wise first choice, as we ultimately arrived back late for lunch and with a decision to consolidate the three urban loops and the shores of Lake Pontchartrain into one comprehensive run. The main thing gained from our urban time was a feel for the suspension on rough surfaces, of which New Orleans has plenty. With four modes and two moods, anyone can surely find the ride they like best. For us, the most noticeable aspect was an overall firm but solid and comfortable

ride, normal and desirable for a "driver's car," with some firmness surely due to the 17-inch tires and wheels and their shallower performance sidewalls—again, what we'd want and expect in a dynamic car.

All in all, the CT 200h may be considered more tech than performance, but "dynamics" is what was promised, along with style and luxury touches, and it delivers.

HIGH TECH AT MODERATE COST

How did Lexus achieve so much in such a seemingly modest package? Partly, it was a convergence of determined engineers and willing management. Brian Bolain tells us the project's chief engineer came straight to the project from one of the more expensive cars in the Lexus lineup and "was not used to budgets." He saw to it that the team applied a lot of goodies.

And how much do all these goodies, with this performance and a highly-refined hybrid system, set you back? Pricing had not been determined when we were in New Orleans, but they hoped to stay in the low \$30s. Just as we went to press, pricing was released, and they outdid themselves—the 2011 Lexus CT 200h starts at \$29,120 (\$29,995 with \$875 destination fee, i.e. under \$30k). As Mark Templin, group VP and general manager of Lexus, says, "For just \$1,000 more than the cost of a non-luxury hybrid, buyers can indulge in a CT 200h with our proven Lexus Hybrid Drive technology." Options are minimal, but accessories are plentiful—24, the most ever—and can be installed by the dealer or at the port of entry (it is built in Japan). Also available are a line of "S" accessories.

The CT 200h is set for a global introduction—simultaneously in all Lexus markets, some 60 countries in all. (Hybrids represent about 5-6 percent of the US market, but as much as 45 percent in Europe.) The CT 200h should arrive at US dealers about the first of March. ■



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